DOCUMENT RESUME

ED 424 172 SO 029 289

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TITLE Improving Intermediate Grade Geography Skills.
PUB DATE 1997-05-00
NOTE 78p.; M.A. Action Research Project, Saint Xavier University and IRI/Skylight.
PUB TYPE Dissertations/Theses (040)
EDRS PRICE MF01/PC04 Plus Postage.
DESCRIPTORS Cultural Awareness; Economics; *Geographic Concepts; Geographic Location; Geographic Regions; *Geography Instruction; *Intermediate Grades; Middle Schools; *Physical Geography; Social Studies
IDENTIFIERS Middle School Students

ABSTRACT

This report describes a program for improving student geographical skill components identified as place and orientation, cultural geography, economic geography, physical geography, and plants and animals. Middle school students in a middle class community in the midwest participated in the study. Three major categories of interventions were identified to address the ignorance of geography described. Strategies include: (1) a daily scheduled geography-based opener; (2) home involvement in the awareness of the five themes of geography; and (3) the implementation of an active learning program involving hands-on materials. Data gathered after the strategies were implemented showed that students were able to raise their scores on the post geography assessments and there was evidence of a measurable improvement in attitude toward the subject. (Author/EH)

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IMPROVING INTERMEDIATE GRADE GEOGRAPHY SKILLS

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An Action Research Project Submitted to the Graduate Faculty of the

School of Education in Partial Fulfillment of the

Requirements for the Degree of Masters of Arts in Teaching and Leadership

Saint Xavier University & IRI/Skylight

Field-Based Masters Program

Chicago, Illinois

May, 1997

SO 029 289

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DEDICATION

This paper is dedicated to the memory of
Raymond M. Neihengen
Robert Jacob Zimmer

and in celebration of
Alphons C. Eberhardt IV

ACKNOWLEDGEMENTS

The researchers wish to thank the students and faculty
of Buildings A and B for their willingness to share
their experiences and insights
with others.

We also wish to thank the other staff members
who have rendered their technical
assistance to this endeavor.

We appreciate you all.

A final thank you with grateful appreciation
to our families, without whose
support this paper would
simply not be.

We love you.

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ABSTRACT

This report describes a program for improving student geographical skill components identified as place and orientation, cultural geography, economic geography, physical geography, and plants and animals. The targeted population consisted of middle school students, grades four and six, in growing, middle class communities located near a large midwestern city. The problem of ignorance of geography was documented through classroom assignments and tests as well as in a demonstrated inability to reach a state-wide level of competence in national geography contests.

Analysis of probable cause data revealed that teachers are ill prepared to teach geography, that the social studies curriculum is heavily weighted toward history, and that materials necessary to bring the experience of geography into the classroom are lacking. Faculty reported a minimum of instructional time devoted to the subject of geography. Reviews of literature mirror these findings.

A review of solution strategies suggested by knowledgeable others, combined with an analysis of the problem settings, resulted in the selection of three major categories of interventions: a daily scheduled geography-based opener; home involvement in the awareness of the five themes of geography; and the implementation of an active learning program involving hands-on materials. Together these strategies will increase the amount and quality of instructional time devoted to student skill development and mastery.

Post intervention data indicated that with the added time and emphasis given to geography in the intermediate grades through these interventions, the students were able to raise their scores on the post geography assessments. Students also evidenced a measurable improvement in attitude.

CHAPTER 1

PROBLEM STATEMENT AND CONTEXT

The Problem Statement

The students of the targeted intermediate fourth and sixth grade classes demonstrate a lack of mastery in those geography skill components identified as place and orientation, cultural geography, economic geography, physical geography, and plants and animals and their natural habitats. Evidence for the existence of these problems includes classroom assignments and tests, and a demonstrated inability to reach a state-wide level of competence in national geography contests.

Immediate Problem Context

Building A

This parochial school building houses a total of 288 children in grades kindergarten through eight, with a total of 96 students in grades four, five, and six. The average class size is 32 students per class. The student population is 84% White, 9% Asian, 5% Hispanic, and 2% Black; 1% of the population receives special education support, and 1% of the students are Limited-English-proficient. At present, all students are Catholic. The school does not participate in the federally-supported lunch program, but it is estimated that 2% of the students are from low-income families based on tuition grants and parish subsidies; the median household income is at the $50,000 level. Absenteeism is not a factor in this school setting with the attendance rate being 98% (School A Evaluation: Self-Study Book, 1994-95).

The full-time staff of 21 and a part-time staff of 4 have an average of 12 years of experience in the teaching field. Five have Masters Degrees while the remaining staff hold either Bachelor of Science or Bachelor of Arts degrees. The principal has her Certificate of Specialist in Education (secondary school administration). The full-time staff includes a physical education and health/conflict resolution teacher, a music/drama/dance teacher, an art/resource teacher, and a computer lab/learning center teacher. The part-time staff includes an advanced math specialist, a reading specialist, and a foreign language teacher. There is little staff turn-over; the only change in the past two years involved one teacher on maternity leave (Principal Building A, personal communication, June 10, 1996).

The facility itself is a two-story building with a one-story wing attached to an old parish chapel. Built with two classrooms in 1922, the one-story wing is now the carpeted primary wing and building additions now provide a total of 10 classrooms, a library, a computer lab, and two small-group instruction rooms. At present, the lower level of the chapel serves as a gym and the parish center as an auditorium, while another facility is presently under construction and will serve these purposes. Though the area was rural in 1922, the school is now located in the middle of a busy and prosperous commercial suburban area.

The classrooms in grades kindergarten through five are self-contained, while grades sixth through eighth are departmentalized in spelling and English, math, and science. All grades have a special art, computer, music, and physical education teacher. In grades four through six geography is taught as part of the social studies

curriculum by the classroom/homeroom teacher, five times a week in 40 minute class periods.

Building B

This suburban school building houses 766 children in grades kindergarten through six, and 20 children in a self-contained learning disabled and special needs pre-kindergarten. Grades four, five, and six contain 350 children and have an average class size of 29 students. Two teacher-aides are being utilized in classrooms of 30 or more. The school-age student population is 95% White, 3% Asian, 1.2% Black, 0.6% Hispanic, and 0.2% Native American. Of this population, 4% are in full-time special education classrooms and 7% receive special education support. Based on the federal guidelines for free/reduced price lunch, 2% of the students are considered low-income. The average household consists of two wage earners in their early thirties; the average income is $72,5000. The attendance rate of 96.5% is higher than the district rate; the student mobility rate of 12.7% is lower than the district rate (School Improvement Plan, 1994-95).

The faculty includes 44 full-time kindergarten through grade six staff members, averaging 15 years of experience . Masters Degrees have been attained by 37 staff members while the rest have Bachelor degrees. There is little faculty turnover, although due to district growth, more teachers and classrooms are needed. Two mobile classrooms will be utilized during the 1996-97 school year (District Report Card, 1995-96).

This facility was built and opened for the 1992-1993 school year. Located in a portion of a suburban village experiencing tremendous growth, the two-story modernistic building contains 31 air-conditioned and carpeted classrooms, a large library/learning center, and a computer lab. Attached to the school is an all-purpose room and a gymnasium. The exterior facilities include two playgrounds and adjacent parking facilities.

The classrooms in grades kindergarten through six are self-contained but have special teachers for art, music, resource, and physical education. Geography in all grades is taught as part of the social studies curriculum by each classroom teacher, and in grades four, five, and six for 45 minutes each day.

The Surrounding Community

Building A

This school is one out of a total of 58 parochial schools in this large diocesan system which serves 18,502 school children. Compliance with the policies and requirements of the diocesan school office is expected. Day to day decisions are made by the principal. Policy decisions are brought before the school board for discussion, evaluation and vote, and then sent to the pastor for ratification.

This suburban school is located in a busy commercial area; students are bussed or privately transported from this and six other suburban communities. The population of the community is racially diverse: 82% White, 8% Asian, 7% Hispanic, and 3% Black. The median age is 31.2 years old and 30% list themselves as Catholic. Median income in this community is $64,510. (Business manager Building A, personal

communication, June 10, 1996). The community provides a wide variety of living, working, shopping and recreational opportunities with 10 parks located within its boundaries (Village A Chamber of Commerce Telephone Companion, 1995-96).

The greatest issues of concern are those of space limitations and the need for alternative sources of funding as the costs of education increase. Space only exists for one classroom at each grade level; there is a waiting list for grades kindergarten through five; the surrounding communities continue to grow. At present the parish contributes 38% of the cost of educating its students. As these costs increase, the parish as well as the parents look for financial assistance .

Building B

This building is one of 34 elementary, 7 middle, and 3 high schools which service 32,000 students in this district. Each school has its own principal; the district has one superintendent and two area superintendents who assist him.

The district services five communities producing a diverse population of 95.1% White, 3% Asian, 1% Hispanic, 0.8% Black, and 0.1% Native American. The average household income of $35,554.00 for families in Building B is substantially higher than the average household income found in the rest of the district (District Report Card, 1995-96).

Major issues focus on the increasing growth of the area. Besides the need for more classrooms and/or an increase in class size, the addition of low-income households is threatening to change the racial make-up and lower the economic status

in some sections of the district . At present union-management talks are on-going in an effort to an effort to avoid contractual differences and improve communications.

National Context of the Problem

The scope of the American student's ignorance of geography has received international, national, and local attention. In a report for Geographic Awareness Week, Walters reported that international surveys raised awareness about the need for improved geography education in the U.S. (Walters, 1994). Further, Leon E. Panetta, former advisor to President Jimmy Carter, in a speech before the U.S. Congress on behalf of the Foreign Language Competence for the Future Act, 1989, reported, "American youth know less about geography than any age group in any country..." (Panetta, 1989, Foreign Language Competence for the Future Act, p.H1494-1495).

At the national level, one measure of geographical ignorance is evidenced in student performance on direct measures of geography goals on the NAEP (National Assessment of Educational Progress). Tests of these goals with fourth grade students, as reported in documents from the National Center for Educational Statistics, 1995, reveal that , "in 1994 only one out of every four students in the fourth grade met the performance level standard in geography" (NAEP, 1995, p.63). From the same report it was noted that 3 out of every 10 fourth graders were unable to reach the lowest level of geography measurement (NAEP, 1995).

On the local level, a study of the social studies section of the Iowa Test of Basic Skills for the last three years in the district for Building B reveals that in geography the

students scored in the second lowest average percentile (Illinois Goal Assessment Program, 1992). In Building A students' geography skills are tested but scores are not reported as a separate subset of the social studies battery.

The ignorance of geography in the U.S. is serious. A 1990 article appearing in Time magazine stated:

> One in 7 Americans cannot find the U.S. on a blank world map, and 1 in 4 cannot locate the Pacific Ocean, according to a 1988-89 Gallup survey commissioned by the National Geographic Society. In the same poll, American students between the ages of 18 to 24 came in dead last among ten countries tested in Geography (Allis, 1990, p.53).

This ignorance of geography is mostly evidenced among the non-middle aged population. "Of eight industrialized countries, the U.S. is the only one where people over 55 do better at geography than recent high school graduates" (Boaz, 1993, p.18).

CHAPTER 2

PROBLEM DOCUMENTATION

Site Based Problem Evidence

Building A: Local Assessments

At the beginning of the 1996-1997 school year the targeted sixth grade (N=32) was given a battery of tests that would measure the students' familiarity with those terms and skills essential to success in the area of geography. When questions, taken from last year's text (Macmillan, 1990), pertained to the United States, 94% (30) of the students were able to perform at an 80% or higher level, even in areas requiring map reading (Appendix A). Other assessments were taken from the current grade text, Macmillan,1990, and can be found in appendices B, C, D and E. On general knowledge questions, only 75% (24) of the students were able to score at the 80% or higher level. Questions pertaining to the Ice Age and physical features of the ancient world resulted in only 9% (3) of the students scoring at the 80% level, followed by 44% (14) succeeding at map reading (involving latitude, longitude and direction) and 53% (17) being able to successfully read a time line. Even though 90% (30) of the students predicted that they would score an 85% or above when taking a test in geography, not one (N=30) was able to score higher than 64%, with the median score being 19%, when 50 questions excerpted from the school version of the National Geography Bee (1993-1995) were given (Figure 1). See Appendix F.

Building B: Local Assessments

During the first weeks of the 1996-1997 school year, 27 targeted fourth graders were given a battery of geography related assessments. Different measures were used to test local and national knowledge with a strong focus, as prescribed by the district's curriculum for fourth grade, on the United States. The local assessment was compiled by the researcher, whereas the country-wide testing came from the National Geography Bee (1993-1995) (Figure 1). See Appendix G.

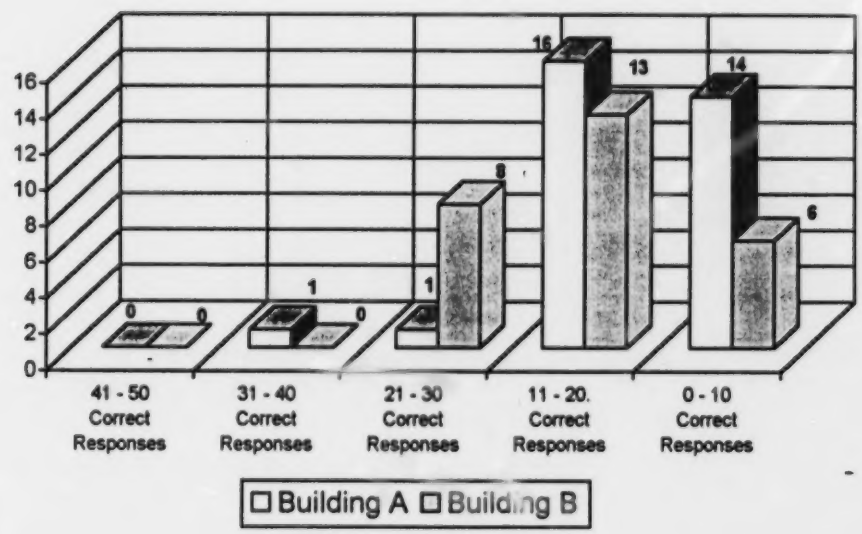


Figure 1. Number of correct student responses on 50 question National Geography Bee pre-test (9/96).

Probable Causes

Building A

A teacher attitude survey (Appendix H) given prior to the start of the 1996-1997 school year found that all kindergarten through grade six social studies teachers (N=7) felt that the knowledge base of their students was below that of students in other countries. All felt that a significant emphasis on geography, as a discipline separate and distinct from history, was not seen in their current social studies texts. Finally, based on self-reporting done by the teachers, only the primary teachers spent up to one-half of their allotted social studies time on geography, and that time was less than 45 minutes per week. Broad topics such as family, neighborhood, community, etc., were covered in other subjects and accounted for the increased time spent. One teacher reported teaching social studies only half of the school year, alternating with another subject the other half of the year.

At the middle school level (N=3), the time allotted for social studies increased dramatically to a minimum of 190 minutes per week, while time devoted to geography decreased to between one-fourth and one-third of the total instruction time. Two teachers also added that the instruction they received in geography was limited to time spent in fourth grade as students themselves (Figures 2 & 3, Appendix I).

Building B

Prior to the first week of the 1996-1997 school year, a teacher attitude survey (Appendix H) was distributed to 22 elementary teachers, first through sixth grade.

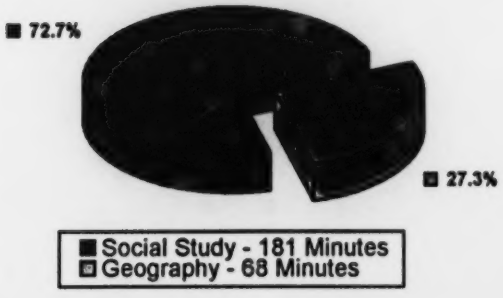
Findings showed that there was little or no emphasis on the teaching of geography. Staff members voiced concerns about the amount of time necessary for teaching the given curriculum. Another issue dealt with limited materials and outdated texts. As for student knowledge being lower than those of other countries, teachers felt that the accessibility of travel was a factor for European students. Travel plans for the simplest vacation could include exposure to multiple, distinct cultures. The average time spent on geography in the classroom was approximately 90 minutes per week, although it is important to note that many of the teachers surveyed considered themselves to have taught both social studies and geography at the same time (Figures 2 & 3, Appendix I).

TEACHER SUPPLIED REASONS WHY U.S. STUDENTS SCORE LOWER IN GEOGRAPHY

Rank Order	1 Less time spent on geography
	2 Outdated texts
	3 Travel less and are exposed to fewer cultures

Figure 2. Three Reasons Supplied By Teachers (Building A & Building B) Why U.S Students Score lower in Geography Tests Expressed in Rank Order.

REPORTED AVERAGE TIME SPENT; SOCIAL STUDIES v. GEOGRAPHY (BUILDING A)



REPORTED AVERAGE TIME SPENT; SOCIAL STUDIES v. GEOGRAPHY (BUILDING B)

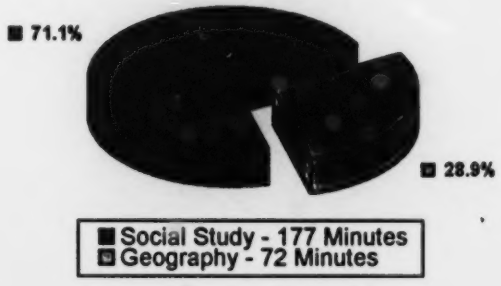


Figure 3. Average Weekly Number of Minutes Reported by Teachers Spent on Teaching Social Studies as Compared to Geography and Expressed in Percentages for Comparison.

Buildings A & B: Student Surveys

The same student survey (Appendix J) was administered in both buildings. Twenty-seven fourth graders and 31 six graders answered questions that focused on their overall attitudes towards learning and education (Figure 4). In Figure 4 it is interesting to note that the percentage for neutral is greater than for negative. At the fourth grade level (Building B) students were also asked to give a definition for the word geography; many students found the term difficult to define or unclear.

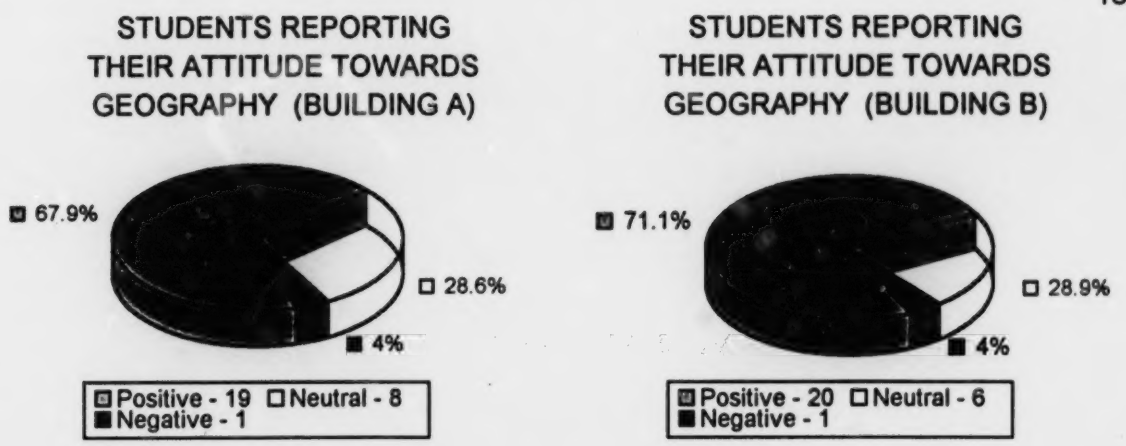


Figure 4. Student Attitudes Toward Geography Expressed in Percentages for Comparison.

Professional Literature

The literature detailing probable causes for the state of geography instruction today can be grouped into three areas: geography as an academic discipline at the university level, with an emphasis on teacher training; geography as a component of the curriculum in the nation's schools; and the nature of the subject of geography.

Geography as an academic discipline within universities almost disappeared in the 1960's and 1970's (Salter, 1990). Reasons supplied for this condition include a change in focus among some of the best geographers from teacher preparation to the more lucrative area of research, and the subsequent migration of geographers to more technical and specific subdivisions of geography (Salter, 1990). The advanced mean

age of geographers is offered as evidence of this process (Salter, 1990). This movement away from general geography instruction lead to the demise of academic departments so that fewer and fewer universities offered geography as part of their curriculum (Salter, 1990).

As a component of an elementary, middle, or high school curriculum, geography has not been a balanced part of social studies. Rissinger (1992) observes that before the 1990's, geography had almost disappeared from the curriculum. Salter noted that less and less time has been allotted to geography as more pressing social issues demanded curriculum time. He went on to note further that it was often assumed that geography skills were routinely being included as a part of history instruction (Salter, 1990).

Another blow to the solidification of a geography curriculum has been the lack of standards. Until late 1994, geography had no national standards with which to provide continuity or criteria for program evaluation. Without standards administrators were unlikely to push school boards for curriculum adoption.

The third cluster of professional literature examines the nature of geography as a subject and the methods of instruction used in the past. As a part of social studies, in particular history, geography instruction has been framed in an approach called expanding environments. Knowledge of the subject in this context progresses from the simple to the complex in an ever widening set of circles. Crabtree points out that, "there is no foundation in research in child development and learning for the tenets of

the expanding environment framework" (Crabtree, 1989, p.117). Further, the National Commission on Social Studies in the Schools (1989) rejected expanding environments in favor of studies of people and places.

The nature of geography itself is difficult to manage because it is "a special, process based reality...difficult to experience within the confines of the classroom." (Nickell, 1993, p.92). As a process, Patrick has pointed out that in the past "the process of active learning as a pedagogical technique for teaching geography is missing" (Patrick, 1991, p.14).

Thus, professional literature points to the failure of university academic departments to promote and maintain interest in the field, the lack of geography curriculum development, the lack of standards applicable at all educational levels, and the need to improve geography instruction to embrace and involve learners. These are all probable causes for the identified sitebased problems.

In summary, teacher surveys revealed a dramatic deficit in the amount of classroom time devoted to geography instruction as a separate and meaningful part of the social studies curriculum, as well as an overabundance of out-dated texts as probable causes. Student surveys, on the other hand, point to a lack of fun experiences in geography, underlining the dismal student performances on local as well as national assessments.

CHAPTER 3

THE SOLUTION STRATEGY

Literature Review

The professional literature addresses the current state of geographical education by stating that the field of social studies, and geography in particular, is "ripe for reform" (Nickell, 1992, p.91). In response, state and local school systems are working to revise curricula to reflect a stronger emphasis on geography (Maryland Geographic Alliance, 1990).

This emphasis is evidenced by increased curriculum requirements at the high school level for social studies including geography. In a 1990 report, Patrick noted that in 25 states the high school requirement for graduation mandates course selections from the social studies core curriculum for three years; but in 20 other states, that is not required (Patrick, 1990). The nature of new approaches to social studies and geography indicates that more time must be taken to teach it. Marran (1994, p.9) summarizes the components of the new geography as:

Emphasizing spatial relationships
Encouraging problem solving
Being connected to critical thinking skills
Replacing breadth with depth
Employing collaborative learning strategies
Being research based
Adapting easily to new technologies
Resting on observation through field work
Emphasizing human -- environment interaction
Building upon frameworks and standards

Each of these methods demands more time and emphasis be placed on geography as an instructional system. To increase the time spent on geography, one of the simplest and most concrete methods suggested was to have the school sponsor the school-level national Geography Bee produced by the National Geographic Society (Salter, 1990).

A second solution evidenced in professional literature is the relationship between parental example and a child's interest in geography. At the personal level it was reported that many geographers noted their own interest in geography could be traced to early travel and map exploration experiences (Salter,1990). Salter further reported that parent involvement that enriched the geographical content of traveling sessions was a simple but important contribution to an interest in geography. Stoltman (1990) reported that geographical awareness in the home could be improved by parents who: watched television programs that encouraged geographical questions from their child, provided geographical resources, discussed news and other items with geographical themes at meal times, and examined maps from different perspectives.

Besides spending more time on geography in school and at home, another theme is the improvement of teacher training in geography. The literature suggests that the implementation of the 1994 Social Studies Standards is a place to start. "The staff development challenge presented by the standards offers geography educators another opportunity to improve the quality of geography taught in schools" (Bednarz & Petersen, 1994, p.63). The implementation of the standards will force a measure of introspection on the part of schools and school boards across the country. "The

development of the national standards represent important parts of the self-evaluation process" (Bednarz & Petersen, 1994, p.64). "Pre-service teacher training could also be enhanced by university acceptance of geography as an educational discipline..." thereby demonstrating "the efficacy of geographical education as a field of specialization within geography" (Bednarz & Petersen, 1994, p.62). Teacher training must also coincide with subjects taught so that students receive the benefit of properly prepared instructors. A report on geography issued by the New Hampshire Council for the Social Studies (1990) makes the recommendation to demand the appropriate academic background for the subjects the instructor is assigned to teach. The in-service dimension of teacher-training is also addressed in the professional literature. In geography, in-services have been attended ranging from one day, to networked sessions, to week long summer institutes (Bednarz & Petersen, 1994).

The instructional methods used to teach geography are highlighted in professional literature. Tye (1991) points out that lesson plans for geography often take advantage of community resources, case studies, and the rich ethnic diversity of the students in today's classroom. Rissinger (1992) indicates that social studies and geography are great sources for writing as an instructional strategy. He mentions that portfolios are used in current practice to expand assessment techniques.

Project Objectives and Processes

As a result of the implementation of specific student activities emphasizing the five themes of geography identified as place and orientation, cultural geography,

economic geography, physical geography, and indigenous plants and animals, 27 fourth graders and 32 sixth graders will demonstrate an improved mastery of geographical concepts. The researchers will work with the targeted groups during the period from September, 1996, through January, 1997. Prior to implementation, researchers will use similar measures to assess the skill levels and abilities of the targeted groups. The 27 fourth graders will take teacher-made tests for the local assessment; the 32 sixth graders will be given tests from the Macmillan Social Studies texts, grades five and six. The National Geography Bee (1993-1995) will be used by the researchers to compile two lists of 50 questions to measure the broader knowledge base of both targeted groups. All student pre-tests will be re-administered in January, 1997, to measure the improvement in geography skills and the increase in geographical knowledge.

In order to accomplish the project objectives the following strategic interventions are necessary:

1. The teacher will direct students to respond to a daily, open-ended question or statement that is geography based.

2. The teacher will direct the students to write a bi-weekly current events report to be presented orally emphasizing one or more of the themes of geography.

3. A series of weekly activity based lessons will be developed to allow for hands-on discovery in small group settings.

Project Action Plan

The interventions will be applied during the first semester of the 1996-1997 school year by one fourth grade teacher who is the instructor in a self-contained, whole-class setting, and one sixth grade teacher who is the instructor in a departmentalized, whole-class setting. At each site, social studies is taught daily in a 40 to 45 minute time block.

As part of the beginning of the year review for both fourth and sixth grades, geography knowledge will be tested via quizzes and short assignments. In Building A, the geography content tested will include information from the previous year (Appendix A) and from the current text (Appendices B, C, D, & E). In Building B, the geography content taught at the previous grade level in a unit-structured, non-textbook environment will be tested. These tests and assignments will be analyzed to determine the level of student ability, knowledge, and understanding in geography.

During the first two weeks of school a student attitude survey about school and specifically geography will be administered (Appendix J). The same survey will be given after the interventions have been applied as a basis for noting any change in the students' attitudes. The survey will take approximately 15 to 20 minutes to administer.

To ascertain teachers' attitudes about the preparedness of students in geography as well as to determine the approximate classroom time allotted for the subject, the teaching staff from each building will be asked to complete a short survey

during the opening weeks of school (Appendix H). These responses will also be examined for a cause-effect relationship between time allotted and student preparedness.

A grade-appropriate pretest derived from past questions used in the National Geography Bee, published by the National Geographic Society, will be administered during the first month of school. See appendices F and G. The test will be comprised of 10 multiple-choice and 40 short answer questions concerning the five themes of geography. Results will be analyzed to reveal student performance levels.

Daily interventions will begin within the first week of school consisting of a single eclectic sentence completion or multiple choice question to be answered at the beginning of the school day. This daily geographical energizer is expected to be answered in a five minute period. Students' responses will be entered into their geography notebooks and corrections will be made sometime during the school day. On a regular basis, items of particular interest from this collection will be selected for placement in the individual student's portfolio. The teacher's role in this activity is to prepare and place the statement on the board or overhead prior to the students' arrival and to facilitate the discussion of, and obtain the correct responses for, the statement from the students. This intervention is designed to increase the time spent on geography and to set the stage for its emphasis in the classrooms.

Bi-weekly current events will be introduced as an intervention during the first weeks of the school year. The teacher will model a reporting method for world news

(current events) that emphasizes the five themes of geography in a written form to be applied to a news media. Once modeled, the students will perform this task at home, preparing notes which will be returned to school. Parents will be encouraged to assist in the completion of this task through the selection of appropriate news media delivery systems and the discussion of events selected. The students will report their findings in cooperative groups whose members will have assigned roles. One of these roles may be the "reporter" who pinpoints the location of the event on a map with the appropriate latitude and longitude and another the "navigator" who associates the area with another geographic entity through the use of cardinal directions (East, West...). The "recorder" will add the written report to the class portfolio while each student files his news article in his individual portfolio. These reports will be referred to periodically to develop travel brochures, for detective-type guessing games, and to develop settings for fictional characters in creative writing pieces. The teacher's role in this activity will be to devise the initial reporting format for data collection, develop and maintain the cooperative learning groups, motivate and assist students in the further development of activities based on this reporting, and to supply parents with any needed guidance.

Once a week the teacher will lead a 40 to 45 minute hands-on class demonstration or small group activity during the social studies time block. The teacher will present material and elicit responses leading to the development of a discovery-based geography framework (Appendix K). The students will actively engage in explorations leading to an understanding of geographical concepts or mastery of geographical skills. The explorations will include using an orange to discover how

projection maps are made; making globes, using balloons to represent the earth, showing the relationship between areas of land and bodies of water; using postcards collected and brought in by the children to define and describe the categories of places and landforms; and designing postcards which will display information, obtained through student research on each of the states. The activity itself, its implications, and relevance to previous geographical findings will be discussed within groups and shared with the class. A discovery log will be maintained as part of the students' portfolios and presented again for review in activities such as word finds and crossword puzzles.

Methods of Assessment

In order to asses the effects of the interventions, post-tests identical to the pre-tests will be given. In addition, portfolios of individual student work and a whole-class portfolio will be kept throughout the intervention period. Scoring rubrics will be developed and interviews with students will be held as part of the assessment process. Parent reaction/response will be encouraged in an intervention follow-up letter (Appendix L).

CHAPTER 4

PROJECT RESULTS

Historical Description of the Intervention

The objective of this project was to enhance student performance and to increase student knowledge in geography at the intermediate level by improving student mastery of geographical skill components identified as place and orientation, cultural geography, economic geography, physical geography, and plants and animals. The implementation of increased time given to geography through short daily lessons, bi-weekly home involvement through current events assignments, and weekly hands-on lessons were selected to effect the desired changes.

Building A

The sixth grade in Building A, a parochial school building in a commercial, suburban area housing kindergarten through grade eight, was a departmentalized class of 32 students. The researcher was the Social Studies teacher. Beginning in the first week of September, 1996, and continuing through the third week of January, 1997, an attention-getting geography teaser question was placed on the board or overhead as the children entered the room each morning. The children were to record the question, use whatever materials were needed to quickly research the answer, and record their solutions. Materials used included maps, globes, atlases, text books, and other students. Notebooks were then put away until later in the morning, during the scheduled Social Studies class period, when the question and answer would be

discussed. A child with the correct answer was asked to record both the question and the answer on a sentence strip which was then laminated and posted in the hallway for all to share. Before class time accounted for approximately 10 minutes, while in class sharing took another 5 minutes.

During this same time period, bi-weekly news reporting / recording was done on a teacher-prepared form (Appendix M) which stressed the who, what, when, where, why questions. Students were encouraged to use the newspaper as a source for this activity, and parents were asked to monitor the types of news events selected. (Parents were also asked to be involved if the student selected television news as a source.) Additionally, students were asked to bring in the article when practical. On Tuesdays and Fridays each child would share his article with a buddy, and one boy and one girl would be chosen at random to share with the entire class. These sharing sessions always included locating the place noted in the article and identifying it by its latitude and longitude. All children were then encouraged to file their reports in a binder labeled to correspond with each continent. Special emphasis was given to continents currently being studied as part of the sixth grade curriculum. This activity took approximately 15 minutes on each of these days. During particularly hectic weeks, however, this activity would take place only once.

Larger blocks of time were available on Friday afternoons and, on a weekly basis, the children participated in hands-on discovery lessons which used common materials to demonstrate concepts in geography. Children were encouraged to use

their kinesthetic and visual intelligences as they observed the results of their demonstrations. One such lesson considered the implications of picturing a round, three-dimensional object, such as an orange, on a flat projection map. Another lesson used poster paints and balloons to compare the relative sizes of the continents and the surface areas of the oceans. Both lessons can be found in Appendix K. Although the lessons went well, the choice of a Friday afternoon, the only period providing two flexible blocks of time, proved to be a problem. Many holidays, conferences, workshops, scheduled assemblies, and other school responsibilities prevented the students from completing as many projects as the researcher would have preferred. In addition, some projects, such as the balloon globe, took several weeks to complete.

Another difficulty encountered in Building A was the imposed time structure of a departmentalized setting. All three interventions fell victim to the bell signaling the end of the social studies period, regardless of the students' high interest level - finished or not.

Building B

The study in Building B was administered in a self contained classroom in a higher-middle class neighborhood. Parents tend to be quite conscientious, supportive and involved in school activities. Students in this research began each day by copying two geography based questions from the board into their D.O.G. notebooks. By using the available classroom resource corner, they were able to derive at logical answers. The more complex ones had to be researched with learning center or home resources.

After 20 minutes the class was brought together to discuss the questions of the prior day. This intervention concluded at the end of each week where selected questions that had posed a higher level of difficulty were typed into a computer, then transferred onto 8 inch construction paper strips. They were placed on a clothesline which became known as the "String of New Knowledge". This was done in an attempt to visually assist children in their education. Quite often map skills were also incorporated into these lessons as visual aids. Both implementations proved to be of great use to improve student learning during this daily intervention. The students obtained a comfort level as the familiarity of the task and content progressed. It is important to note that this building celebrated their first year of involvement with the National Geography Bee, which was received with enthusiasm.

The original plan to use media materials on a bi-weekly schedule to connect the school with the home was quickly modified due to time constraints. Rather than two 20 minute lessons this researcher elected to have one, 40 minute discussion towards the end of the week. A bulletin board was created as a tool to cover the who, where, why, when and how questions to each issue, as an entire class activity. Students in Building B leaned towards the media of television more than the others because of the accessibility. This intervention's purpose was not only to improve individual knowledge, but placed an emphasis on parent involvement. Positive, lengthy discussions evolved at home about specific subject matter. Sometimes, even to the point where everyone would take on an appreciation for the family's own personal

experiences that related to that particular topic of discussion. Conversations initiated by parents to the researcher revealed they were pleased, surprised, and encouraged by what their children were retaining through this geographical intervention. If the researcher was to select the most effective of interventions, without question, this one would be selected. Not only did insightful discussion and higher level thinking occur, but an eagerness to complete additional tasks that were not even assigned. It also seemed to improve student self-esteem.

The third intervention consisted of five hands-on activities that introduced all seven multiple intelligences (Appendix K). They included: landforms, globes, maps, timelines and a state fair. All of them were assigned within a four month period, beginning back in September. Each of the projects varied timewise, depending on the amount of needed procedures and the level of difficulty. Every one of them began with the first day being spent brainstorming, modeling, and assigning of certain guidelines. Students became somewhat competitive because of the precedence that the early finishers would set. It became evident that they were also encouraged by their own high expectations. There was a real desire for them to go the extra mile, especially with the landforms and state fair exhibition. It amazed parents when they observed the vast differences. This culminating activity did an excellent job at tying all of the multiple intelligences into one. The only downside of this intervention was the time allotment of each completed task. Stragglers were asked to sometimes finish the given project at home.

Presentation and Analysis of Results

In order to assess the effects of these interventions, pre and post tests were given in both buildings. Both researchers took care not to teach any of the specific test items, and feel that the results are reliable. The pre and post data from the fifty question assessments were compared and are presented in Figure 5 and Figure 6.

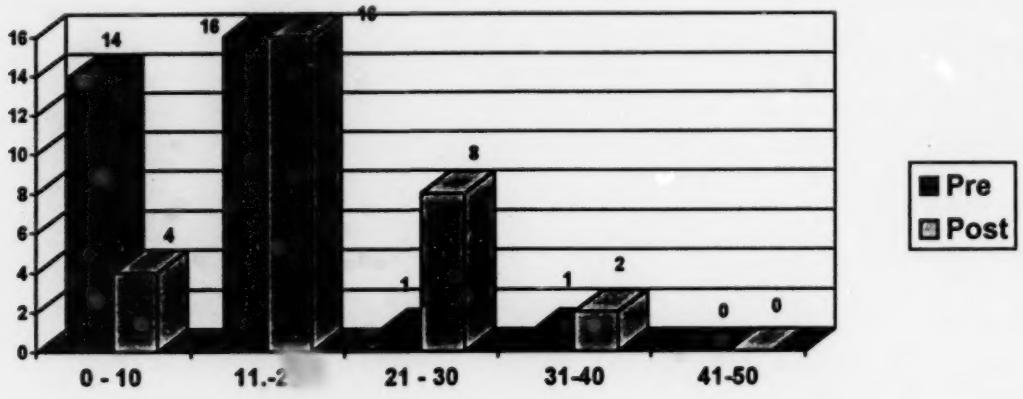


Figure 5 Building A. Pre and Post Data From the Fifty Question Assessment.

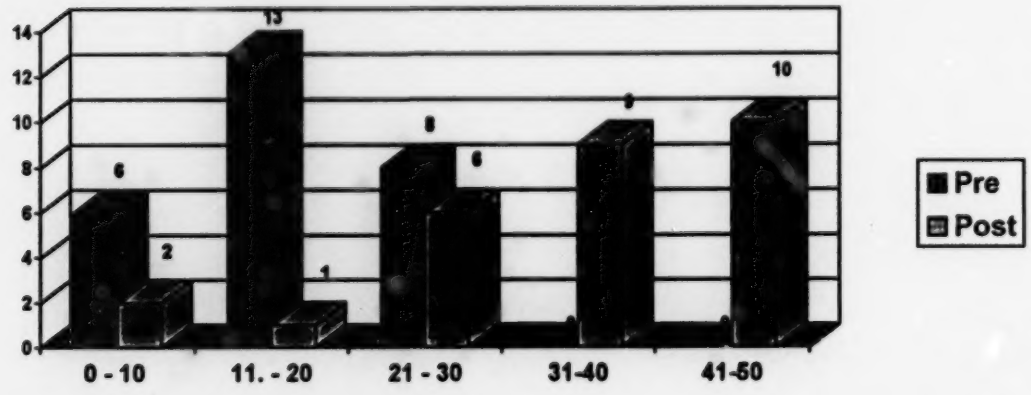


Figure 6 Building B. Pre and Post Data From the Fifty Question Assessment.

The interventions appear to have been successful. The number of students scoring in the lower ranges decreased, while the number of students scoring in the higher ranges increased for both buildings.

Due to the depth and breadth of the six grade curriculum, further subtests were warranted. The Pre and Post tests (appendices A, B, C, D, & E) covering U.S. geography taught in the previous grade as well as tests requiring new knowledge in the sixth grade content areas of basic geography terms, the Ice Age, map reading, and time line interpretation were given, with resulting comparisons appearing in Table 1.

Table 1

Subtests Building A : Pre and Post

Number of Students Scoring in the 80% or Higher Range

	Pre N=28-31	%	Post N=28-31	%
1995-1996 Text: The United States and Its Neighbors (tested 9/96)				
U.S.	30	94	29	94
1996-1997 Text: The Eastern Hemisphere (tested 1/97)				
General Knowledge	24	75	19	67
Ice Age	3	9	7	24
Map Reading	14	44	28	90
Time Lines	17	53	16	76

The number of students taking the pre and post tests in Building A changed not only from pre to post, but also from subtest to subtest. The absence of two of the brighter students during parts of the post test may account for the drop in general knowledge scores. Figures shown indicate selected subtests showed marked improvement. Positive changes in map reading scores are seen as a result of the concentrated emphasis on map skills and a new-found level of comfort on the part of the students as they initiate explorations on unfamiliar maps.

Additionally pre and post student attitudinal survey data was compared. This survey, found in Appendix J, called for students to use a Lickert scale to assess their personal attitudes toward the learning of geography. The scale ranged from very positive, identified as a one (1), through neutral, as a three (3), to very negative, referred to as a five (5). The results seen in Table 2 represent the combining of the "positive" and "very positive" into the positive category, as well as the combining of the "negative" and "very negative" to form the negative category.

Table 2

Students' Attitudes Towards Geography: Pre and Post

Building A	Positive	Neutral	Negative
Pre	19 (67.9%)	8	1
Post	24 (80%)	4	2
Building B	**Positive**	**Neutral**	**Negative**
Pre	20 (71.1%)	6	1
Post	26 (92.8%)	1	1

Again the interventions appear to have had a positive effect. In Building A positive responses during the pretest were 67.9% while the post test showed 80% of the students reporting a positive attitude. Building B also showed an encouraging change in attitude, with the pretest reporting 71.1% as feeling positive while the post test showed 92.8% now feel this way. Also noted is the considerable corresponding decrease in students reporting neutrality. Even though variations existed in the exact methods of implementing the interventions in buildings A and B, the percentages of positive change within each building are noteworthy.

Conclusions

Based on the presentation and analysis of the data on student geography scores and attitudes, the students showed considerable improvement in performance. Beginning the day with the geography brain teaser focused student attention on the

five themes of geography. This intervention appealed to the students as was observed in class discussions of the material where students demonstrated enthusiasm, intellectual curiosity, and geographical awareness. The researchers also feel that this particular intervention had a most measurable effect on the students as they competed in their respective school National Geography Bee contests.

Weekly and bi-weekly current events appeared to connect home with the classroom in a positive manner, and provided a context for a relationship between the curriculum and every day life. Parent comments on the intervention were encouraging and included such comments as, my child "couldn't stop talking about the news that we watched last week," and "I'm nervous because my child comes home and tells me things that even I know very little about." Student responses included, "I really liked doing this" and "when can we do this again?" Through this intervention students were able to relate their own personal experiences to geographical locations. These connections proved to be most helpful during the school's National Geography Bee contests.

The hands-on geography lessons and projects helped to unify the interventions and provided a vehicle for the application of the students' newly acquired skills and knowledge. Self-esteem was enhanced through the success that the students discovered as they shared their final products. The researchers felt that this success may have contributed to the growth of the students' positive attitudes as evidenced in

the post attitudinal survey. Appealing to the children's multiple intelligences, these projects provided an avenue for individual learning.

Building A

As a result of these interventions, grades five through eight began an analysis of the scope and sequence of the social studies curriculum. This analysis led to the conclusion that the subject of geography needed a more prominent place in the curriculum. Beginning with the fall term, 1997, geography will be taught as a separate subject in the fifth grade and will include both the eastern and the western hemispheres. The text that was selected is based on the five themes of geography as put forth by the National Geographic Society. Grade six will continue to use the eastern hemisphere text (Macmillan, 1990) building on the newly developed geography skills of the students. Students in grade seven should show significant improvement in geographical concepts and skills as a result of the 1996-97 interventions, allowing the teacher to spend more time developing the political and economic aspects of the social studies curriculum in grades seven and eight.

Building B

Even though the interventions ended in building B, the researcher has continued to implement a similar geography plan in the classroom. Students continue to use their geography skills to further their learning. The researcher has been able to influence the district-wide adoption of a new social studies series geared more towards geography. This building also plans to become to permanent participant in the annual

school geography bee. The culminating activity for these interventions, a class fair, encouraged other classrooms who now wish to be included in future fairs based on geography activities. Most important to note is the continued interest exhibited by the students in current events and the location of these events. The researcher feels that, as a result of these interventions, the students will enthusiastically enter fifth grade, ready to build on a firm foundation in geography.

Recommendations

Some recommendations that the researchers see as being important to their colleagues concern the buildings' scheduling. The interventions were more easily handled in the block scheduling as it existed in Building B. The self-contained classroom allowed the researcher the flexibility to conduct the interventions in a more fluid manner, completing them in a more timely fashion. It is also this researcher's opinion that the current events intervention was one that deserved a top priority. It served to engage the child and the parent in meaningful dialog and mutual learning. It should be noted that Building B did not limit current events to a particular continent or theme, and yet the students showed a tendency to reach beyond familiar areas into the unknown. The researcher also found that students extended the assignments beyond what was expected to gather further knowledge for themselves.

In Building A, current events was the cause of much excitement, especially when students found that others in the class focused in on the same bit of information. After beginning this intervention without limitations, the researcher decided to harness the

enthusiasm of the students and direct it toward the subject matter at hand, namely the continents of the eastern hemisphere. This eliminated the students' tendency to stay within the familiar confines of North America, and allowed the students to make connections within the curriculum.

Although the sharing of current events was enjoyed by Building A students, the researcher felt that the daily geography questions provided a fun way of reviewing the more unfamiliar geography terms and concepts, while at the same time, promoting student understanding and retention. In the upper levels, the questions could be restated to include the answer, resulting in a statement, while in the lower levels, the researcher felt that a special emphasis needed to be placed on the transcription of the question itself. In this way the answers would be better connected to the question, allowing for a more complete understanding for the younger child.

Both researchers also felt that participation of the student body in the National Geography Bee proved to be an enriching experience, emphasizing geography within the Social Studies curriculum.

Although more knowledge was gained in shorter intervals of time through the interventions of the sharing of current events and daily oral geography, both researchers feel that it is important to introduce visual spatial experiences into the geography curriculum to meet the needs of more learners. Hands-on activities should be selected to encourage the doing of geography and should be ones which will supplement the students' experiences within the environment. These projects should

be geared more towards the physical act of making a model representing a part of the environment that cannot easily be brought into the classroom or is not accessible to the students. Within these hands-on activities, emphasis should be placed on the physical representation of concepts and their corresponding associations in the real world. For example, a student builds a delta, names the delta, and places his delta model in an exact location on a regional or world map. In this way, the student's perception and understanding of the real world around him will continue to deepen and grow. The student's body of knowledge will be enhanced by his school experiences and not limited to the world at hand.

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Appendices

Name _____ Date _____

Fill in the circle before the correct answer. Use the map to answer questions 2 through 5.

1. What kind of information is shown on a landform map?
   - (a) the products of a region
   - (b) the population of an area
   - (c) the natural features of a region
   - (d) the roads in an area

2. The western half of the state of Arizona is a _____.
   - (a) canyon
   - (b) mountain
   - (c) plateau
   - (d) plain

3. The two main landforms in Georgia are plains and _____.
   - (a) hills
   - (b) mountains
   - (c) plateaus
   - (d) lakes

4. Which of the following states has the most different types of landform?
   - (a) North Carolina
   - (b) California
   - (c) Ohio
   - (d) New Mexico

5. The Appalachian Mountains stretch from Alabama to _____.
   - (a) Maine
   - (b) Ohio
   - (c) Florida
   - (d) Texas

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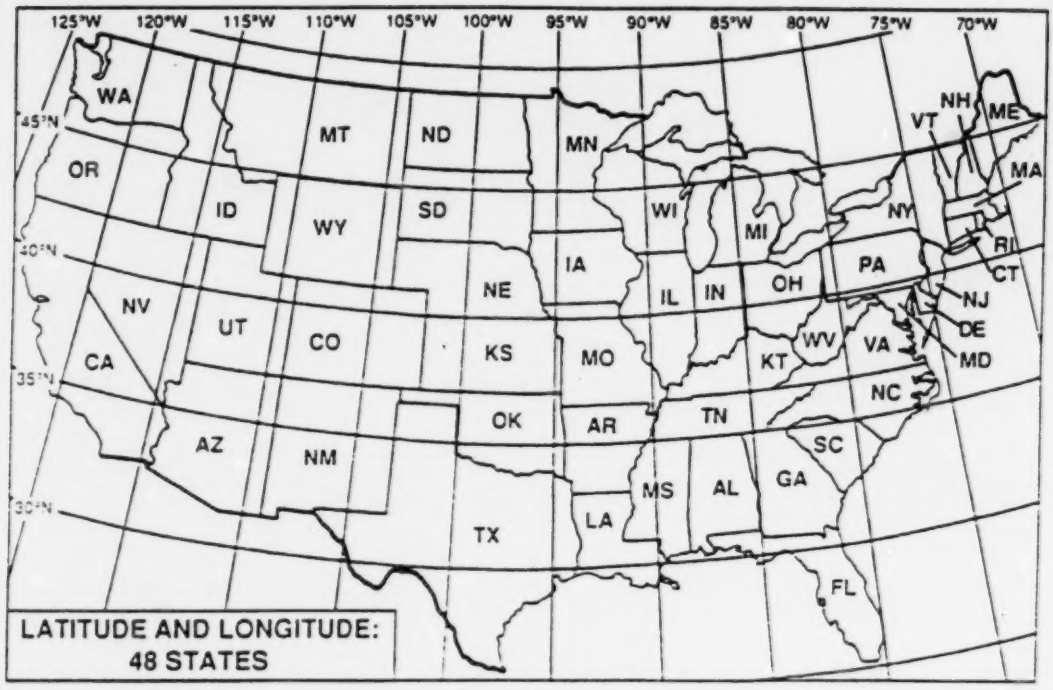
Name _____ Date _____

Fill in the circle before the correct answer. Use the map to answer the questions.



6. The 40°N latitude line forms the northern border of _____.
   (a) Nebraska (b) Kansas (c) Wisconsin (d) California

7. In which state does the 40°N latitude line cross the 110°W longitude line?
   (a) Arizona (b) Colorado (c) Utah (d) Nevada

8. The location 35°N latitude by 105°W longitude is in _____.
   (a) Missouri (b) Mississippi (c) Oklahoma (d) New Mexico

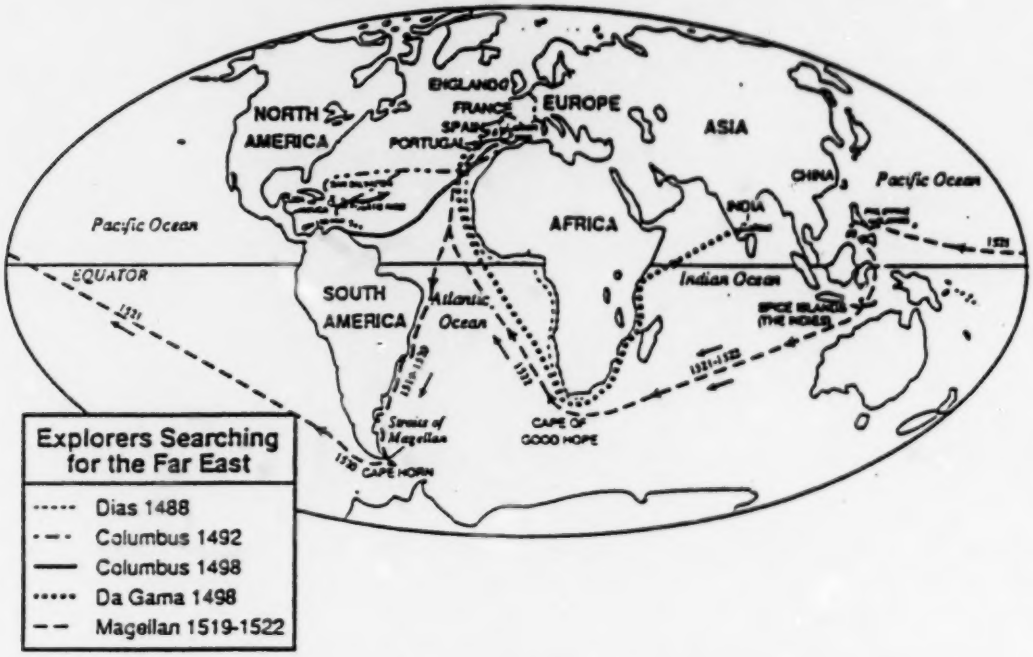
9. Eastern Louisiana is located at 30°N latitude by _____ longitude.
   (a) 80°W (b) 90°W (c) 100°W (d) 110°W

10. Which latitude line forms the northern border of three neighboring states?
    (a) 30°N (b) 35°N (c) 40°N (d) 45°N

SKILLS

Name _____ Date _____

Fill in the circle before the correct answer. Use the map to answer the questions.



6. Columbus's third voyage, in 1498, took him around the island of _____.
   (a) Cuba (b) Puerto Rico (c) Jamaica (d) San Salvador

7. Magellan's crew sailed around the Cape of Good Hope in _____.
   (a) 1488 (b) 1498 (c) 1520 (d) 1522

8. Da Gama sailed from Portugal to _____.
   (a) China (b) South America (c) India (d) Hispaniola

9. Dias's voyage took him along the coast of _____.
   (a) South America (b) Asia (c) Europe (d) Africa

10. Which explorer took his fleet all the way around the world?
    (a) Magellan (b) Columbus (c) Da Gama (d) Dias

CONTENT **CHAPTER 1**

Name _____ Date _____

Fill in the circle before the correct answer.

1. **The natural plant life of a region is called its ____.**
   ⓐ **vegetation** ⓑ **tropic** ⓒ **landform** ⓓ **location**

2. Moisture in the form of rain or snow is called ____.
   ⓐ pollution ⓑ fog ⓒ precipitation ⓓ smog

3. The distance north or south from the equator that a region is located is called ____.
   ⓐ altitude ⓑ environment ⓒ temperature ⓓ latitude

4. Natural substances that are reached by mining, or digging into the earth, are called ____.
   ⓐ crops ⓑ streams ⓒ minerals ⓓ shafts

5. Areas located at a high altitude usually have ____ temperatures than areas located at a low altitude.
   ⓐ warmer ⓑ hotter ⓒ drier ⓓ cooler

6. The pattern of weather that an area has over a long period of time is called ____.
   ⓐ atmosphere ⓑ climate ⓒ tide ⓓ longitude

7. How much of the earth's surface is covered by land?
   ⓐ 10 percent ⓑ 30 percent ⓒ 50 percent ⓓ 70 percent

8. An example of a nonrenewable resource is ____.
   ⓐ water ⓑ plants ⓒ copper ⓓ wind

9. Two factors used to describe climate are precipitation and ____.
   ⓐ temperature ⓑ mining ⓒ resources ⓓ geography

10. Fresh water and good soil are reasons that ____.
    ⓐ weather patterns change from place to place
    ⓑ the earth is divided into three climate zones
    ⓒ people settle in certain regions
    ⓓ some areas have warmer temperatures

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Name _____ Date _____

11. Seas, rivers, and lakes are types of ____.
(a) precipitation (b) environments (c) harbors (d) bodies of water

12. A tropical climate is found near the ____.
(a) North Pole (b) equator (c) South Pole (d) British Isles

13. An example of a renewable resource is ____.
(a) metal (b) oil (c) coal (d) wind

14. The currents in the ocean affect the ____ of a region.
(a) altitude (b) soil (c) resources (d) temperature

15. Which word best describes the difference between weather and climate?
(a) size (b) time (c) nature (d) reserve

16. Salt, iron, and gold are kinds of ____.
(a) minerals (b) vegetation (c) metals (d) steel

17. Land, water, weather patterns, plants, and animals are a part of ____.
(a) nonrenewable resources (c) the middle latitudes
(b) the environment (d) landforms

18. Which of the following factors affects the climate of an area?
(a) kinds of vegetation (c) height above sea level
(b) types of animal life (d) natural resources

19. A nonrenewable resource is something that ____.
(a) can never be replaced or rebuilt
(b) can easily be replaced
(c) is spread evenly in the world
(d) is manufactured by people

20. Landforms, climate, and natural resources influence the way that ____.
(a) people live in different areas
(b) islands are formed
(c) weather patterns develop
(d) people change the environment

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Ice Age

Name _____ Date _____

Fill in the circle before the correct answer.

1. Objects made by people long ago are called _____.
   ⓐ values ⓑ glaciers ⓒ artifacts ⓓ shrines

2. People who had no permanent homes and traveled from place to place in search of food were called _____.
   ⓐ nomads ⓑ merchants ⓒ artisans ⓓ villagers

3. The use of skills and tools that serve human needs is called _____.
   ⓐ custom ⓑ society ⓒ archaeology ⓓ technology

4. The established form of ruling in a country is called the _____.
   ⓐ legacy ⓑ government ⓒ culture ⓓ values

5. A personal diary is an example of a _____.
   ⓐ resource ⓒ primary source
   ⓑ society ⓓ secondary source

6. At the beginning of the New Stone Age, people began _____.
   ⓐ using fire ⓑ farming ⓒ sailing ⓓ gathering

7. People throughout the world have a need for _____.
   ⓐ computers ⓑ warm clothing ⓒ geography ⓓ shelter

8. An example of a secondary source is a _____.
   ⓐ photograph ⓑ birth record ⓒ textbook ⓓ letter

9. What achievement had the most significant effect on the growth of culture during the Old Stone Age?
   ⓐ language ⓑ tools ⓒ art ⓓ skills

10. What two developments resulted in the establishment of villages during the New Stone Age?
    ⓐ the shortage of animals for food and the creation of stone weapons
    ⓑ the domestication of animals and the cultivation of land
    ⓒ the movement of glaciers and the creation of lakes
    ⓓ discovering fire and making pottery

Name _____ Date _____

11. People who study the remains of past cultures are called ____.
   (a) miners (b) obsidians (c) storytellers (d) archaeologists

12. Stone Age hunters made tools such as axes from ____.
   (a) copper (b) wood (c) flint (d) steel

13. The food people eat often reflects their ____.
   (a) culture (b) technology (c) profession (d) government

14. Families, clubs, and teams are types of ____.
   (a) values (b) social groups (c) governments (d) customs

15. The growth in technology among early peoples was one result of ____.
   (a) village life (b) cold weather (c) more shelters (d) nomadic life

16. The people of the Old Stone Age met their basic needs by ____.
   (a) cooperating and sharing (c) moving to warmer climates
   (b) living together in one place (d) hunting and gathering

17. One achievement of people who lived during the Old Stone Age was ____.
   (a) raising crops at one location (c) domesticating some animals
   (b) developing religious beliefs (d) creating storage containers

18. What led early people to settle in villages?
   (a) a steady food supply (c) the discovery of fire
   (b) improved trading routes (d) the beginning of language

19. Values are an important part of every culture because they reflect the ____.
   (a) manner in which people meet their wants
   (b) way people live, believe, worship, and are governed
   (c) beliefs of the people who run the government
   (d) rights of people to live, work, and play wherever they choose

20. The warming of the earth changed the lives of early people by allowing them to ____.
   (a) develop more advanced tools and weapons for hunting
   (b) live apart from one another to develop different cultures
   (c) do less hunting since they no longer needed skins for heavy clothing
   (d) farm the land and spend more time in one place

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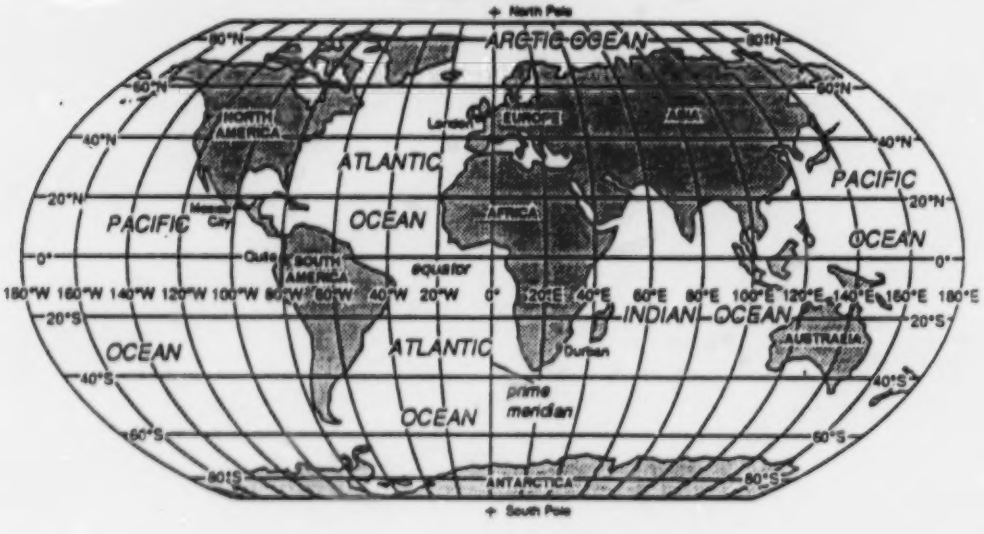
Name _____ Date _____

Fill in the circle before the correct answer. Use the map to answer questions 2 through 5.

GLOBAL GRID



1. Lines of latitude and lines of longitude are useful for _____.
   - (a) identifying landforms on maps
   - (b) understanding ocean currents
   - (c) locating places on earth
   - (d) finding altitudes of areas

2. The North Pole is at about _____ degrees north latitude.
   (a) 80 (b) 60 (c) 20 (d) 0

3. About how many degrees are there between Mexico City and Quito?
   (a) 10° (b) 20° (c) 40° (d) 60°

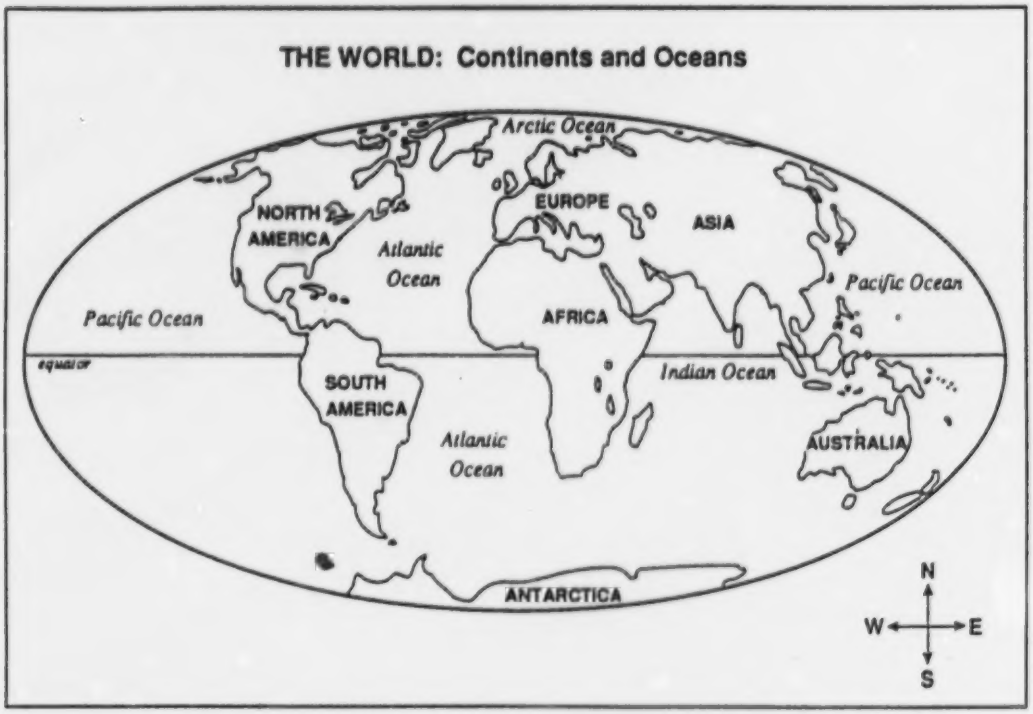
4. The latitude and longitude of the southern tip of South America is about _____.
   (a) 40°S, 100°W (b) 58°S, 70°W (c) 55°N, 80°W (d) 60°S, 100°E

5. Which city is closest to the prime meridian?
   (a) Quito (b) Mexico City (c) Durban (d) London

SKILLS

Name _____ Date _____

Fill in the circle before the correct answer. Use the map to answer the questions.



6. Which continent is north of Africa?
   (a) North America (b) Australia (c) Europe (d) South America

7. What is the southernmost continent?
   (a) Australia (b) Antarctica (c) South America (d) Africa

8. Which continent borders Europe?
   (a) Africa (b) North America (c) Australia (d) Asia

9. Which of the following continents is south of the equator?
   (a) Australia (b) Europe (c) Asia (d) North America

10. Which is the largest continent?
    (a) Asia (b) Africa (c) South America (d) Europe

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Name _____ Date _____

Fill in the circle before the correct answer. Use the chart to answer the questions.

1. Which technology developed around 9000 B.C.?
   - (a) villages
   - (b) pottery
   - (c) artisans
   - (d) storage baskets

2. When did the village of Catal Hüyük develop?
   - (a) before 9000 B.C.
   - (b) before 8000 B.C.
   - (c) after 7000 B.C.
   - (d) after 4000 B.C.

3. When did codes of law begin to appear?
   - (a) 1000 B.C.
   - (b) 2000 B.C.
   - (c) 3000 B.C.
   - (d) 4000 B.C.

4. Which development occurred earliest?
   - (a) discovery of fire
   - (b) irrigation of crops
   - (c) cultivating crops
   - (d) invention of the wheel

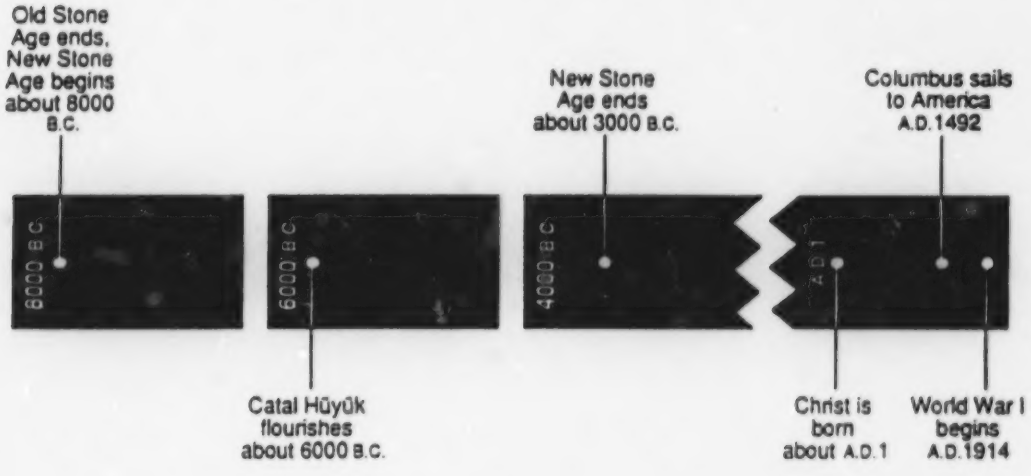
5. Which development occurred more recently than others?
   - (a) building of chariots
   - (b) herding of animals
   - (c) using bronze for tools
   - (d) creation of an alphabet

The Growth of Technology	
Fire Bone tools Flint tools Spear-throwers	10,000 B.C.
Baskets for storage	9000 B.C.
Herding animals Cultivating crops Villages	8000 B.C.
Metal working Pottery Catal Hüyük	7000 B.C.
Specialization Artisans Irrigation	6000 B.C.
Sail	5000 B.C.
Plow Wheel Using bronze Writing	4000 B.C.
Cities Armies Chariots	3000 B.C.
Codes of law Using iron Alphabet	2000 B.C.

Name _____ Date _____

Fill in the circle before the correct answer. Use the time line to answer the questions.

DEVELOPMENT OF CULTURE


Old Stone Age ends, New Stone Age begins about 8000 B.C.
New Stone Age ends about 3000 B.C.
Columbus sails to America A.D. 1492
8000 B.C.
6000 B.C.
4000 B.C.
A.D. 1
Catal Hüyük flourishes about 6000 B.C.
Christ is born about A.D. 1
World War I begins A.D. 1914

6. How many years after Christ's birth did Columbus sail to America?
   (a) 1,492 years (b) 1,914 years (c) 3,000 years (d) 6,000 years

7. How many years passed between the end of the New Stone Age and the birth of Christ?
   (a) 10,000 years (b) 8,000 years (c) 3,000 years (d) 1,000 years

8. Which is the earliest date on this time line?
   (a) 8000 B.C. (b) 7000 B.C. (c) 3000 B.C. (d) A.D. 1914

9. What is the most recent event on this time line?
   (a) Columbus sails to America (c) Christ is born
   (b) New Stone Age ends (d) World War I begins

10. Which event on this time line happened nearest to the birth of Christ?
    (a) Old Stone Age ends (c) World War I begins
    (b) Columbus sails to America (d) New Stone Age ends

Appendix F
Fifty Question Pre and Post Test
Building A

ANSWER EACH QUESTION TO THE BEST OF YOUR ABILITY. YOU ARE NOT EXPECTED TO KNOW ALL OF THE ANSWERS, SO RELAX AND DO THE BEST YOU CAN!

1. Fields that farmers build like stairsteps into the slopes of steep hills are commonly known by what term?

2. A change in atmospheric pressure usually signals a change in weather conditions. Name the instrument that meteorologists use to measure atmospheric pressure.

3. What is the term for an area that is made fertile by a source of of fresh water in an otherwise arid region?

4. What kind of natural disaster causes more damage from the storm surges it creates than from the high-speed winds commonly associated with it?

5. What type of landform is occupied by the countries of North and South Korea?

6. What is the term for the often colorful lights that occur in the atmosphere above the earth's *northern* geomagnetic pole?

7. Which U. S. state is *entirely* an archipelago?

8. What *kind* of physical feature forms the southern boundary of Illinois, Indiana, and Ohio?

9. What is the term for a river that flows into a larger river?

10. How many degrees of longitude would you cross to travel halfway around the world?

11. The peaceful movement of people from one country to another for the purpose of settlement is known by what term?

12. In the 1300s, a major epidemic known as the Black Death killed more than a quarter of the population of which continent?

13. Masa [MAH suh], the dough traditionally used by Mexicans to make tortillas [tor TEE yuhz], is made from the flour of which grain?

14. When Rudyard Kipling wrote *The Jungle Book* he was living far from a jungle in the so-called Green Mountain State. Name this U. S. state.

15. The followers of which major religion face the holy city of Mecca while praying?

16. According to the 1990 U. S. census, most *Asians* immigrating to this country settle in which western state?

17. In which U. S. state would you expect to meet people of French descent known as Cajuns [KAY junz]?

18. Name the Latin American country that is the world's most populous Spanish-speaking country.

19. The name of which *country* in North America probably comes from an Iroquois word meaning "community"?

20. Construction of the Aswan High Dam led to the relocation of the Temples of Abu Simbel [AH boo SIM bul] away from the banks of which river?

21. Which U.S. port on the Great Lakes has developed as a major center for rail, plane, and ship traffic?

22. Which country in Asia has the most influence on trade within the economic region known as the Pacific Rim?

23. Name the country between the Red Sea and the Persian Gulf that has the largest known petroleum reserves?

24. What is the term for a kind of trade that is based on the exchange of goods for other goods rather than for money?

25. Bayous [BYE yooz], which provide habitat for a variety of fish and game animals, play an important economic role in the U.S. states that have coast-lines along which body of water?

26. Name the oil-rich sea between the United Kingdom and Norway that helps make these countries the leading oil producers in Western Europe.

27. Although potatoes were first cultivated in South America, today most of the world's leading potato-producing countries are part of which other continent?

28. Countries that together account for more than half of the world's *export* trade in passenger cars.

29. Parma, a city famous for its production of parmesan cheese, is in the heart of the agricultural region of which European country?

30. Name the country that, in spite of its own timber resources, is the chief *importer* of Canadian forest products.

31. Which state has the longest border with Canada -- Alaska or North Dakota?

32. Martha's Vineyard and Nantucket are islands off Cape Cod that belong to which state -- New Jersey or Massachusetts?

33. Which state is part of the region commonly called Tornado Alley -- Nevada or Oklahoma?

34. The Missouri River joins the Mississippi River just *north* of which U. S. city -- St. Louis or Minneapolis?

35. Washington, D. C., borders Virginia and which other state -- Maryland or Delaware?

36. Which of these states is a Great Plains state -- Nebraska or Ohio?

37. Kenai [KEE nye] Fjords National Park is in which state -- New Mexico or Alaska?

38. The southern border of which state is closer to the Tropic of Cancer -- California or Florida?

39. Which city is the capital of Minnesota -- Minneapolis or St. Paul?

40. The United States is geographically closer to which of these countries -- Russia or Japan?

41. The crown-of-thorns starfish, known for the damage it has done to many of the ocean's coral reefs, is most commonly associated with which of the earth's four oceans?

42. For centuries, black pepper, a spice once valued more than gold, came primarily from what is now the *largest* country in South Asia. Name this country in South

Asia.

43. Giant tortoises, marine iguanas, and tool-using finches are among the unusual animals native only to a group of islands off the coast of Ecuador. Name this group of Pacific islands.

44. The chinchilla, a rodent long prized for its soft fur, is native to which mountain system in South America?

45. The manatee is an endangered mammal that lives in warm, coastal water. In the United States, most manatees live along the coast of which southern state?

46. On which continent have the native people used the llama much as people elsewhere have used the camel?

47. Tiny ticks transmit a disease that is named after the town in Connecticut where the disease was first reported. Name this Connecticut town.

48. Which arctic animal has traditionally played an important role in the economy and lifestyle of the Lapps?

49. The Kaibab [KYE bab] squirrel lives only in the ponderosa pine forests on the North Rim of the Grand Canyon. Kaibab squirrels live only in which state?

50. For years scientists have been working to keep sea lampreys from killing game fish in the Great Lakes. The lampreys migrated from the Atlantic Ocean to Lake Ontario by way of which river?

Questions copied with permission from School-Level Question Booklet, National Geographic Society, (1993-1995)

Appendix G
Fifty Question Pre and Post Test
Building B

ANSWER EACH QUESTION TO THE BEST OF YOUR ABILITY. YOU ARE NOT EXPECTED TO KNOW ALL OF THE ANSWERS, SO RELAX AND DO THE BEST YOU CAN.

1. WHICH IS THE EARTH'S NORTHERNMOST OCEAN - THE ARCTIC OR THE ATLANTIC?
2. THE PLACE WHERE THE BOUNDARIES OF ARIZONA, COLORADO, NEW MEXICO, AND UTAH MEET IS KNOWN BY WHICH NAME - FOUR CORNERS OR GRAND FORKS?
3. THE CHESAPEAKE BAY IS A MAJOR INLET OF WHICH OCEAN - THE ATLANTIC OR THE PACIFIC?
4. WHICH RIVER FLOWS INTO THE PACIFIC OCEAN - THE MISSISSIPPI OR THE COLUMBIA?
5. WHAT IS THE TERM USED FOR THE DAILY RISE AND FALL OF OCEAN WATERS - TIDES OR CURRENTS?
6. MOST OF THE AMAZON RAIN FOREST IS IN WHICH SOUTH AMERICAN COUNTRY?
7. GREENLAND IS CLOSEST TO WHICH OF THE EARTH'S POLES - SOUTH OR NORTH?
8. WHICH U.S. STATE IS MOST OFTEN ASSOCIATED WITH EARTHQUAKES?
9. THE EVERGLADES IS A VAST WETLAND REGION IN WHAT SOUTHERN STATE?

10. WHICH RIVER IS PART OF THE UNITED STATES AND MEXICO BORDER?
11. WHAT IS THE TERM FOR MOLTEN ROCK THAT FLOWS FROM A VOLCANO?
12. WHICH STATE IS A GREAT PLAINS STATE - NEBRASKA OR OHIO?
13. MARTHA'S VINEYARD AND NANTUCKET ARE ISLANDS OFF CAPE COD THAT BELONG TO WHICH STATE?
14. CHICAGO IS THE MAJOR METROPOLITAN AREA ON THE SHORE OF WHAT BODY OF WATER?
15. WHICH STATE IS PART OF A REGION COMMONLY KNOWN AS TORNADO ALLEY?
16. IN WHAT STATE IS CRATER LAKE NATIONAL PARK - OREGON OR ARKANSAS?
17. WHERE IS THE GREAT SALT LAKE - UTAH OR NEVADA?
18. THE CAPITAL OF MINNESOTA IS?
19. GLACIER NATIONAL PARK IS IN WHICH STATE - MONTANA OR NORTH DAKOTA?
20. THE OHIO RIVER BORDERS WHICH STATE - KENTUCKY OR IOWA?
21. WHICH CAPITAL CITY IS ON THE MISSISSIPPI RIVER - BATON ROUGE, LOUISIANA OR AUSTIN, TEXAS?
22. WHAT MOUNTAIN IS NORTH AMERICA'S HIGHEST PEAK?
23. WHICH OF THE GREAT LAKES DOES NOT BORDER CANADA?
24. WHAT STATE BORDERS FOUR OF THE GREAT LAKES?

25. A STRIP OF LAND THAT ACTS AS A BRIDGE BETWEEN TWO LARGER AREAS IS A WHAT?
26. WHAT IS AN IMAGINARY LINE THAT DIVIDES THE EARTH INTO TWO EQUAL HALVES?
27. WHAT IS THE TERM FOR THE EARTH'S LAYER OF MINERAL AND DECOMPOSED ORGANIC MATERIAL?
28. WHAT ARE FRACTURES IN THE EARTH'S CRUST WHERE SUDDEN MOVEMENT CAUSES EARTHQUAKES?
29. WHAT UNIVERSAL FORCE, ASSOCIATED WITH ISAAC NEWTON, PLAYS A KEY ROLE IN EROSION?
30. NAME THE COASTAL CITY THAT IS SOUTH AND HAS NEARLY A 50% HISPANIC POPULATION?
31. WHERE DO YOU GO TO VISIT THE FREEDOM TRAIL LANDMARK? IT IS A NEW ENGLAND PORT CITY.
32. MARK TWAIN'S STORIES TAKE PLACE ALONG WHAT UNITED STATES RIVER?
33. WHERE IS THE NATIONAL ELK REFUGE THAT TAKES IN THE LARGEST ELK HERD DURING THE WINTER?
34. DINGOES ARE WILD DOGS ASSOCIATED WITH WHICH CONTINENT?
35. MOST MANATEES IN THE UNITED STATES LIVE ALONG WHAT SOUTHERN COASTAL STATE?

36. THE TRANSMITTED DISEASE BY TICKS IS NAMED AFTER WHAT CONNECTICUT TOWN?
37. THE KAIBAB SQUIRREL LIVES IN PONDEROSA PINE FORESTS IN WHAT STATE?
38. THE GILA MONSTER IS A KIND OF POISONOUS LIZARD NATIVE TO WHAT COUNTRY?
39. WHAT LARGE MAMMAL, RELATED TO THE REINDEER, HELPED KEEP ALASKA'S REFUGE CLOSED TO OIL AND GAS EXPLORATION, DUE TO THEIR NEAR EXTINCTION?
40. WHICH STATE IS ENTIRELY AN ARCHIPELAGO?
41. WHAT IS THE TERM FOR A RIVER THAT FLOWS INTO A LARGER RIVER?
42. WASHINGTON D.C. BORDERS VIRGINIA AND WHAT OTHER STATE?
43. KENAI FJORDS NATIONAL PARK IS IN WHAT STATE - NEW MEXICO OR ALASKA?
44. MANY IRISH EMIGRATED TO THE UNITED STATES IN THE MID-1800'S BECAUSE OF THE FAILURE OF WHAT CROP?
45. WHICH COUNTRY IN THE WESTERN HEMISPHERE HAS BEEN A CHIEF TRADING PARTNER WITH THE UNITED STATES?
46. THE BEANS OF THE CACAO TREE ARE USED TO PRODUCE WHAT GENERAL PRODUCT?

47. DURING THE 1800'S AND EARLY 1900'S, THE DEMAND FOR WHAT RESOURCE WAS THE PRIMARY REASON HUNDREDS OF THOUSANDS OF WHALES WERE KILLED?

48. NAME THE CHINESE ISLAND, KNOWN FOR ITS TEXTILE, ELECTRONICS, AND STEEL INDUSTRIES THAT HAS DEVELOPED ONE OF THE MOST SUCCESSFUL ECONOMIES IN THE WESTERN PACIFIC?

49. NAME THE COUNTRY THAT IS THE WORLD'S LEADING PRODUCER OF SO-CALLED GREENHOUSE GASES?

50. NAME AS MANY CONTINENTS AND OCEANS AS YOU CAN BELOW.

LIST CONTINENTS BELOW LIST OCEANS BELOW

QUESTIONS COPIED WITH PERMISSION FROM SCHOOL LEVEL QUESTION BOOKLET, NATIONAL GEOGRAPHIC SOCIETY, (1993-1995)

SSTQUE.DOC

TEACHER SURVEY Grade Level:_____

1. On average, how many minutes per week do you spend teaching Social Studies?

_____ -90 _____ 90-150 _____ 150-190 _____ 190-240 _____ 240+

2. How much of this time is spent teaching geography? (minutes per week)

_____ -45 _____ 45-75 _____ 75-95 _____ 95-120 _____ 120+

3. It is said that students in the U.S. score significantly lower in geography than students in other countries. Do you agree or disagree? _____ Why?

4. If U.S. students score lower than foreign students in the area of geography, what probable causes might exist to account for this difference?

5. Please rank these areas of geography as to the emphasis they receive in your classroom, rather than as your textbook presents them, with 1 being high and 5 being low.

_____ cultural geography _____ economic geography

_____ physical geography _____ place & orientation

_____ plants & animals _____ other : _____

6. Are you familiar with the National Geography Bee used in schools for grades 4 - 8 ?

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TEACHER CONSENSUS THAT U.S. STUDENTS SCORE LOWER

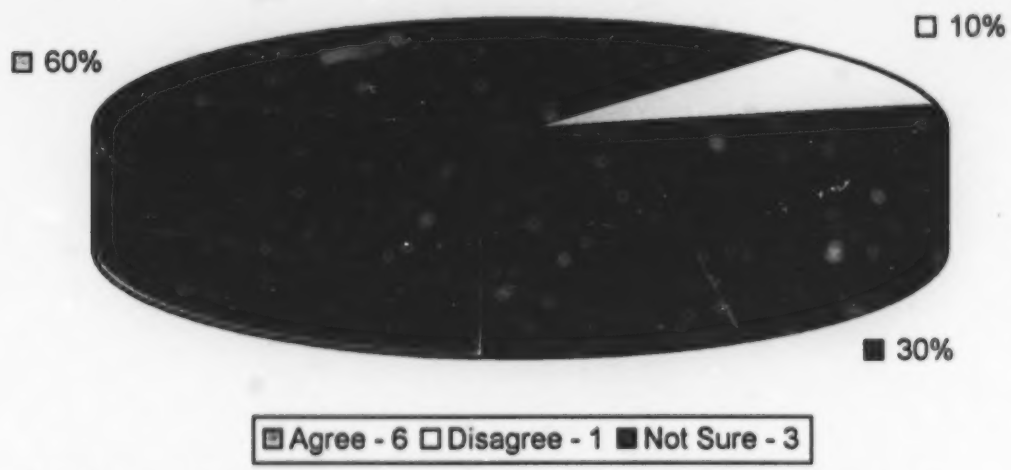

Figure 7 Building A. Teacher opinions regarding performance of U.S. students in Geography as opposed to students of other nations expressed in percentages.

TEACHER CONSENSUS THAT U.S. STUDENTS SCORE LOWER

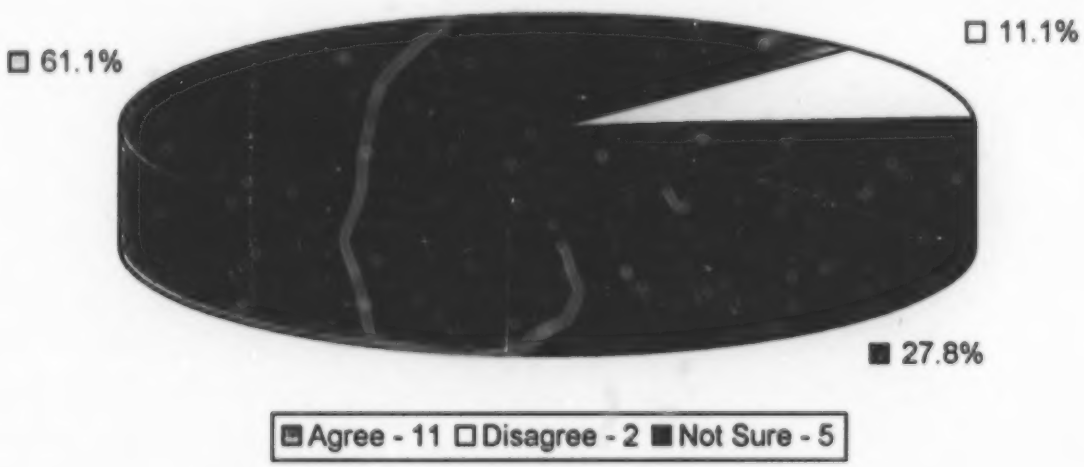

Figure 8 Building B. Teacher opinions regarding performance of U.S. students in Geography as opposed to students of other nations expressed in percentages.

Appendix J
Student Attitude Survey

WHAT DO YOU THINK?

Name _____

Date _____

1. Rank the following subjects:

1 for most liked 3 for so-so 5 for least liked

_____ Math _____ Science

_____ Spelling _____ Reading

_____ Geography _____ English

2. If tested today what grade do you feel you'd receive in the following subjects:

_____ Math _____ Science

_____ Spelling _____ Reading

_____ Geography _____ English

3. Tell me about a learning experience that you've had in school that was fun!

4. What most bothers you when you are trying to learn in a classroom?

5. How do you learn best? What helps you learn?

6. Do you feel successful in school? Why or why not?

7. Rank your personal attitude towards the learning of geography.

Very Positive	Positive	Neutral	Negative	Very Negative
1	2	3	4	5

Appendix K
Hands-On Lesson Plans
Buildings A & B

Title: From State to State
Targeted Intelligence: Visual / Spatial
Supporting Intelligences: Verbal / Linguistic, Intrapersonal, Interpersonal

Thinking Skills: Following directions, listening, interpreting, retelling
Social Skills: Cooperation, respect for others
Content Focus: Social Studies, Language Arts
Materials: 5X7 index cards; pens, pencils, markers; research information

Task Focus: Students use their research to create a postcard that will illustrate characteristics from designated states.
Product: Five drawings on cards; information retold in narrative form
Problem: Using information gained from research in illustrations; retelling facts

Activity:

1. Research assigned state; assignment modeled on board using Illinois
2. In the center of the unlined side of the index card, students will draw an outline of that region. Four other pictures representing that state will surround the outline. No written words allowed. The students will have 15 minutes in which to complete this part of the assignment.
3. Students will pair up to share postcards and knowledge about their states.
4. Partners will then exchange cards and will write down everything they remember about the other's research presentation.

Reflection:

1. Make sure children are told they will be expected to retell all that they have learned from their partners.
2. If partners finish early they may edit each other's narratives.
3. The teacher will circulate to check for understanding and to keep students on task.

Title: How Did They Do That?
Targeted Intelligence: Bodily / Kinesthetic
Supporting Intelligences: Visual / Spatial, Verbal / Linguistic, Interpersonal

Thinking Skills: Following directions, recognizing differences, comparing, analyzing
Social Skills: Cooperation, Listening
Content Focus: Social Studies, Math
Materials: Paper towels, oranges, paper, pens or pencils, overhead maps

Task Focus: Students discuss and record the observed differences between a mercator projection and a sinusoidal or interrupted projection map.
Product: Two labeled sketches from each pair of students representing differences between two types of map projections, accompanied by a short narrative.
Problem: Students try to flatten out an orange peel, to simulate a flat map, as they compare and contrast a sinusoidal and a mercator projection map.

Activity:

1. A class discussion will center around the different ways we use to picture the earth's surface. The flat map and the globe seem to be the most common. The different ways of drawing maps are called map projections and the purpose of the map determines which map projection is used.
2. Students will observe the differences in parallels and meridians, and the differences in land shapes and size. They will notice the way the oceans and some land areas are split on the sinusoidal projection but not on the mercator projection map.
3. Student pairs will receive an orange and a paper towel section. After peeling the orange, student pairs will be asked to try to flatten the peel, making it lie flat. The children will be asked to make connections between the map projections they have previously discussed and the orange peel project.
4. Each student group will produce a sketch of what they have observed, making written comments wherever necessary.
5. The student reflection will be a narrative based on "Mrs. Potter's Questions".

Reflection:

1. Have wipes on hand for easier clean up.
2. The necessary vocabulary must be introduced if they students have not yet been exposed to it.
3. Oranges could also be used to simulate conic, cylindrical, and azimuthal projection maps.

Title: Around We Go!
Targeted Intelligence: Bodily / Kinesthetic
Supporting Intelligences: Visual / Spatial, Intrapersonal, Interpersonal

Thinking Skills: Classifying, comparing, designing, constructing, visualizing
Social Skills: Sharing materials, taking care of one's work space, encouraging
Content Focus: Social Studies, Art, Math
Materials: Tracing paper, pencils, globe and tape; 8" round balloons, string and rulers; paint brushes, both thick and thin; poster paint, in green, blue, yellow, and brown; newspaper strips, ingredients for papier mache, construction paper

Task Focus: Students create a replica of the earth, noting relative size and location of continents and oceans.
Product: Each student will papier mache a globe, using a balloon, and paint it to accurately represent the surface of the earth.
Problem: Students must decide on the relative proportions and placements of continents and landforms as they each produce a replica of the earth.

Activity:

1. Students will be divided into seven groups. Each group will be asked to contribute an accurate tracing of one of the seven continents.
2. One member will post the tracing on the board, with subsequent drawings being placed in position to design a flat map of the earth.
3. Group observations will center on the corresponding sizes of each continent, as well as the sizes of the oceans.
4. Although seated in a group, each student will receive an 8" balloon which he will inflate to an 8" diameter as measured with a piece of string and a ruler. The decision to use 8" will come from class consensus reached by agreeing on an approximation of the diameter of the earth (rounded up) as 8000 miles and a scale of 1" = 1000 miles.
5. Once inflated, each student will apply papier mache to the surface of the balloon. When dry, the students will pencil in the continents and paint them green to signify land, painting the oceans and other large bodies of water blue. The students will use yellow to represent the desert regions and brown for higher elevations. Collars, made from construction paper, will allow the globes to stand.

Reflection:

1. Strip the newspaper on a separate day.
2. Allow at least two days for the papier mache to dry.

Title: Cross Country
Targeted Intelligence: Bodily / Kinesthetic
Supporting Intelligences: Visual / Spatial, Interpersonal

Thinking Skills: Recognition, listening
Social Skills: Cooperation, self-esteem, good sportsmanship
Content Focus: Social studies, Math
Materials: Oversized United States map painted on the playground

Task Focus: The purpose of this activity is to help children recognize states and their capitals by associating them with the shape and location of the state through a physical activity.
Product: None
Problem: Students must quickly locate the correct state when the corresponding capital is give, by running to its outlined shape before his opponent.

Activity:

1. The class will go out to the school playground.
2. The children will be divided into two lines, and positioned six feet from the lower boundary of the huge map, toward the center.
3. The first student in each line will be instructed to run to the correct state upon hearing the corresponding capital read.
4. The first child to reach the correct state returns to the end of his line. His opponent goes to the sidelines to encourage and cheer finalists.
5. The person who remains after others have been eliminated is the winner.

Reflection:

1. How did this strategy help you learn your states and capitals?
2. Would you change the game in any way? If so, how?
3. What other games could you play to focus on this same task?

Appendix L
Parent Reaction / Response Letter

March 11, 1997

Dear Parents,

We wanted to inform you that our action research classroom interventions for the St. Xavier University Masters of Arts program have been completed. Although the students' participation has concluded, we will continue learning more about our world.

The increased emphasis on geography skills and concepts in our classrooms has proven to be quite successful. Please take a minute to discuss how your child feels about this subject, as well as how much more competent he has become.

Your cooperation, support, and extra efforts have greatly been appreciated. We would welcome any comments you have regarding the geography activities you and your child have experienced this school year.

You have done a stupendous job at making your child's world go 'round!

Sincerely,

Miss Silva
Mr. Neihengen
Mrs. Zimmer

Appendix M
Current Events Report Form

NAME:_____ DATE:_____

NEWS ARTICLE	CONTINENT	LATITUDE & LONGITUDE	SUMMARY & IMPORTANCE
DAY/DATE			

Please attach article here.